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Customer equity promotion based on the measurement model with four-dimensional drivers: Application to mobile communication

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The theory which takes customer as an asset has been widely recognized by researchers and practitioners. They proposed lots of measurement models to measure and manage customer equity. But in the research of customer equity promotion, most methods only depend on qualitative analysis. Taking mobile communication enterprise for example, using the measurement model with four-dimensional drivers to obtain quantitative data and combining qualitative analysis of customer equity drivers, this study proposed relevant strategies to promote customer equity of the enterprise. Based on the survey and data analysis of 357 customers from a provincial capital in China, the results showed that the model could determine the weight coefficients of customer equity drivers and their significance, as well as help to develop promotion strategy of customer equity.

Key words: Customer equity, drivers, measurement model, four-dimensional drivers, customer equity promotion.

INTRODUCTION

In 2008, IBM research team established Customer Equity and Lifetime Management solution. This solution helps enterprise to control and manage customer values and optimize long-term customer relationships, as well as maximize the value/risk ratio of the overall customer portfolio. Theories of customer lifetime value and customer equity are just the core of the solution. Since proposed, the theory of customer equity has been widely recognized by researchers and practitioners. Followers of customer equity believe that customer is an intangible asset which creates profits and brings values for enterprises. In a competitive market, a firm's ability to acquire and retain customers is the true source of its sustainable competitive strength. Therefore, in order to improve this strength, increasing the value of customer equity-customer equity promotion, becomes the primary task of an enterprise. However, most strategies, based on researches of customer equity promotion, merely depend on the qualitative analysis of firm's customer equity and

its drivers. On basis of previous research results, this paper will show a model which could not only measures customer equity but also analyzes the drivers quantitatively.

Customer equity is the sum of the lifetime value of all existent and potential customers of a firm, and customer lifetime value refers to the discounted present value of a customer's contribution to enterprise during his/her life (Rust, 2000). Customer equity promotion means the maintenance and increment of the equity, and its process refers to developing loyalty customers on one hand, and making best of customer value on the other hand (Wang, 2001). Scholars carried out abundant researches on customer equity promotion, but most traditional studies indicated the direction corporate should strive to just from qualitative analysis (Blattberg, 1996; Srivastava, 1998; Leyland, 2000). In recent years, some scholars incorporated quantitative method to study customer equity promotion, but they just studied effect of several variables or drivers on customer equity (Wagner et al, 2009; Bruhn et al, 2008; Dong et al, 2007; Drèze et al, 2005; Panda, 2003) rather than analyzing the all drivers and specifying which drivers are more important and worthy of more marketing resource.

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Rust et al. (2000, 2004) proposed that a firm could manage and promote its customer equity by improving the drivers and this viewpoint was widely recognized. They discussed that the management through the three drivers, value equity, brand equity and relation equity, would be more easy to operate and more effective. Based on this point, they established Return on Marketing Model to measure customer equity. This model can also figure out each driver's weight coefficient which reflects its importance to customer equity promotion. Compared with other researches, Return on Marketing Model calculates the weight coefficients of drivers using econometrics and statistics methods, and then develops promotion strategies. Thus this method is more visual and accurate.

Although Return on Marketing Model could determine each driver's importance and provide effective evidences to develop promotion strategies, it ignores two factors: word-of-mouth and cross-buying, which causes underestimate of customer equity value and incomplete analysis of customer equity promotion. Large researches proved that the two variables were very important to customer equity and could not be ignored (Reinartz and Kumar, 2003; Kumar et al, 2008; Bettencourt, 1997; Wangenheim and Bayón, 2007; Villanueva et al, 2008; Verhoef et al, 2001; Ngobo, 2004; Bolton et al 2004). Therefore, this paper considers the effect of word-of-mouth and cross-buying on customer equity, and chooses the measurement model with four-dimensional drivers (Shao, 2009). Based on reserving all advantages of the old model, this model modifies Return on Marketing Model, and adds new driver---perception driver, which is made up of two sub-drivers: word-of-mouth and cross-buying.

Then we apply the new model to determine the size of each sub-driver's impact factor on customer equity, and propose strategies to promote customer equity of mobile communication enterprise, combining with qualitative analysis of its drivers.

METHODOLOGY

Qualitative analyses

This paper will analyze customer equity drivers of mobile communication corporate based on the four-dimensional driving model (Shao, 2009). In the four-dimensional driving model, customer equity is influenced by value driver, brand driver, relationship driver and perception driver.

Value driver

Value driver refers to customer's objective evaluation of the product or service on basis of the comparison of the cost he/she paid and the delivered value he/she achieved. The ultimate purpose why a customer trades with enterprise is to achieve largest customer delivered value, thus brand driver, relationship driver and perception driver can be utilized only when the enterprise provides enough delivered value to satisfy the customer. Therefore, value driver is

the foundation of research on customer equity. Specifically, value driver includes quality, price and convenience.

The services a mobile communication firm provides contain core services and support services (Zhang, 2007). Core services are wireless communication services, and quality firstly refers to the clarity, smooth and signal coverage of the wireless communication. Support services are provided to facilitate customers to use core services, including establishment of business offices, agent network, after services and so on, thus quality also includes the quality of support services. Price in mobile communication is the fee level, and lower level is prior when quality is similar (Zhao, 2006). Convenience mainly means how conveniently customer gets services, including whether the branches are sufficient, the distribution is reasonable, the services are speedy and pay for the phone through network or prepaid card.

Brand driver

Brand driver is customer's subjective evaluation on corporate brand image and brand meaning. Brand could promote customer equity because it reflects the spirit and value of products and services. When the spirit and value is recognized by customers, the brand will win their preference (Jin, 2006). Thus brand could not only attract new customers, but also remind old customers, as well as enhance the relationship between customer and company (Wang, 2002). Brand driver includes brand preference, advert publicity, corporate reputation and commonweal activity.

For mobile communication firms, brand preference comes from customers' recognition of the brand image and brand spirit. It contributes to acquire customer loyalty, and it could not only increase corporate profit, but also buffer the negative influence from competitive behavior (Fournier, 1998). Advert publicity is an effective method to increase popularity, actually means how much attention customer pays on the advert and impact of the advert on customers' transaction behavior. Mobile communication firm can attract new customers through advert publicity, as well as constantly remind old customers to purchase repeatedly. Corporate reputation means corporate public credit and fame in society. It is a comprehensive evaluation from various circles including consumers. With public trust, it influences the purchase intention of customer significantly (Jiang, 2002). Commonweal activity is a way for mobile communication firms undertaking social responsibility, thus active participation in commonweal activity can improve brand's awareness and impress customers with a positive image, as well as make customer recognize the brand better, and promote brand image and competitiveness at last.

Relationship driver

Relationship driver refers to the firmness of the relationship between customer and enterprise. Its effect on customer equity promotion mainly shows on two aspects: increasing the possibility of repeat purchase and decreasing the possibility of switching supplier. From the two aspects, sub-drivers of relationship driver are loyalty program, preferential policy, special treatment, group activity, customer's understanding of firm, firm's understanding of customer and customer's trust of firm.

Loyalty program is incentive measures to stimulate consumption and retain customers. For mobile communication firms, it mainly refers to accumulation of consumption points and point reward. Preferential policy is also a mechanism to stimulate consumption, mainly refers to discount or gifts. Special treatment, mainly aiming at high-level customers, means providing services which general customers can not enjoy, for example, VIP of GoTone of China Mobile could enjoy some services such as presenting professional service journals, special airport services. Group activity means

mobile communication firms make parties for customers to build customer group and maintain the connection of customer and firm. Customer's understanding of firm means how much customer knows about firm's history, business circumstance, prospect and service process. Firm's understanding of customer refers to firm's knowing about the information, consumption demand and consumption characteristics of customer. Mutual understanding between customer and firm is the foundation of satisfied services, and it could enhance the recognition and trust of customer to firm. Customer's trust of firm generates from customer satisfaction; it refers to customers' recognition and confidence of the firm. Only when customer satisfies with the purchase or experience, recognition and repeat purchase could emerge, then trust comes into being. For mobile communication firms, superior services, competitive price and brand personality can strengthen customer's trust of firm.

Perception driver

Perception driver is very important for customer equity drivers. Early studies have not brought perception driver into the driving model of customer equity, but several scholars proposed that customer equity is also subject to some non-purchasing behaviors which are difficult to observe and forecast (Hogan, 2003; Verhoef, 2002). These factors are closely associated with customer perception - the perception driver. It consists of word-of-mouth and cross-buying.

For mobile communication firms, word-of-mouth is a process that customers spread their evaluation of the firm's products or services to others and make influence on others' impression of the firms' products or services, which would influence customers' selection. Word-of-mouth has two different situations: positive and negative. Positive word-of-mouth will increase purchase and customer equity, while negative decrease. Cross-buying refers to customer's purchases of other products or brands provided by the same firm for previous satisfactory experiences, no matter whether the customer knows about the firm. Because of previous experiences, customer was impressed rightly, and then purchase of other brands or services of the same mobile communication firm happens.

Quantitative analyses

This paper applies the measurement model with four-dimensional drivers (Shao, 2009) to calculate the weight coefficients of sub-drivers of customer equity of mobile communication firm, and then supplies evidences to develop promotion strategies for the firm.

Index system and data collection

According to the qualitative analysis of customer equity drivers of mobile communication firms, we establish the index system as follows. *j*: firm selected now, *U*: brand utility, *exp*: expenditure per month, *X*₁: quality, *X*₂: price, *X*₃: convenience, *X*₄: brand preference, *X*₅: advert publicity, *X*₆: corporate reputation, *X*₇: commonweal activity, *X*₈: loyalty program, *X*₉: preferential policy, *X*₁₀: customer's understanding of firm, *X*₁₁: firm's understanding of customer, *X*₁₂: special treatment, *X*₁₃: group activity, *X*₁₄: customer's trust of firm, *X*₁₅: word-of-mouth, *X*₁₆: cross-buying, *X*₁₇: brand inertia. In the system, *X*₁, *X*₂ and *X*₃ reflect the value driver; *X*₄, *X*₅, *X*₆ and *X*₇ correspond with the brand driver; *X*₈, *X*₉, *X*₁₀, *X*₁₁, *X*₁₂, *X*₁₃ and *X*₁₄ reflect the relationship driver; *X*₁₅ and *X*₁₆ correspond with the perception driver. Brand inertia (*X*₁₇) doesn't reflect any driver, and it is one of the characteristics of consumer behavior.

Data in this paper were collected through questionnaires. The questionnaires mainly contain two parts: one part is customer's

information, including education background, profession, income etc. The other part is questions aiming at the four drivers of customer equity, and each question corresponds to one variable in the index system.

The respondents were selected at random. 400 questionnaires were issued and finally 357 questionnaires were processed while 43 pieces were disqualified.

Data analysis

Firstly, we carried out principal component analysis on the data with SPSS (statistical package for social sciences) to solve overlapping information problem and simplify calculation process, because customer equity is restricted by many factors and there are anfractuous relations among them. The result is showed in Table 1. Shao et al. 2009

According to the results in Table 1, we extracted two principal components, and their cumulative ratio is 66.366%.

Table 2 shows the component score coefficient matrix which reflects the linear relations between principal components and original variables.

In order to figure out brand utility, we adopted logistic regression analysis, and the result is showed in Table 3. Shao et al. 2009

Combining brand utility with component score coefficients, we could determine the weight coefficients which reflect the influence of sub-drivers on brand utility. As can be seen from Table 4, (Shao et al. 2009) all coefficients are positive numbers.

Principal component analysis of the data from questionnaires was carried out. Table 1 shows the result. Then we extracted two principal components based on the standard that the eigenvalue should be bigger than 1. Their cumulative ratio is 66.366%, this means they explained the total variance for 66.366%.

Table 2 shows the component score coefficient matrix, which reflects the relation between original variables and component we extracted. For example, the first component could be expressed as follows:

$$F_1 = 0.084X_1 + 0.077X_2 + 0.082X_3 + 0.078X_4 + 0.077X_5 + 0.081X_6 + 0.073X_7 + 0.078X_8 + 0.082X_9 + 0.074X_{10} + 0.074X_{11} + 0.074X_{12} + 0.068X_{13} + 0.076X_{14} + 0.079X_{15} + 0.074X_{16} + 0.054X_{17}$$

We used logistic regression analysis to capture the relations between principal components and brand utility. Table 3 shows the result. And brand utility can be expressed as follows:

$$U = 2.378 + 4.274F_1 - 0.575F_2$$

Combining results in Table 2 with Table 3, we could figure out the relation between original variables and brand utility. That is the coefficient we pursued.

RESULTS AND DISCUSSION

Promotion strategies for value driver

Value driver includes quality, price and convenience and in this study their coefficients are 0.521578, 0.332194 and 0.551596 respectively. Overall, coefficients of value driver are the biggest, which shows the importance of value driver, so the firm should allocate more resource into this driver.

Quality has great influence on customer equity for its

Table 1. Total variance explained.

Component	Initial eigenvalue		
	Total	% of variance	Cumulative %
1	10.255	60.323	60.323
2	1.027	6.044	66.366
3	0.763	4.489	70.855
4	0.687	4.043	74.898
5	0.556	3.273	78.171
6	0.509	2.994	81.165
7	0.481	2.831	83.996
8	0.419	2.465	86.461
9	0.396	2.327	88.789
10	0.361	2.122	90.911
11	0.304	1.786	92.698
12	0.288	1.693	94.391
13	0.247	1.454	95.845
14	0.210	1.233	97.078
15	0.191	1.123	98.201
16	0.170	0.999	99.200
17	0.136	0.800	100.000

Table 2. Component score coefficient matrix.

	Component	
	1	2
1	0.084	-0.286
2	0.077	-0.005
3	0.082	-0.347
4	0.078	-0.300
5	0.077	-0.028
6	0.081	-0.303
7	0.073	0.032
8	0.078	0.194
9	0.082	0.182
10	0.074	0.443
11	0.074	0.391
12	0.074	0.249
13	0.068	0.241
14	0.076	-0.095
15	0.079	-0.189
16	0.074	-0.010
17	0.054	-0.056

large coefficient (0.521578). For mobile communication firms, quality refers to the quality of both core services and support services. Thus the firm should strengthen construction of wireless communication networks to improve core services quality, meanwhile improve support services such as services quality in branches, customer hotline and after service.

Price (0.332194) is an important factor for customers to make purchase decision. In order to promote customer equity, mobile communication firms should make rational pricing strategies to attract new customers and retain old customers.

Convenience (0.551596) influences brand utility most, which means mobile communication firms should make

Table 3. The result of logistic regression.

Variables	B	S.E.	Wald	Df	Sig.	Exp. (B)
F ₁	4.274	0.578	54.691	1	0.000	71.775
F ₂	-0.575	0.228	6.365	1	0.012	0.563
Constant	2.378	0.359	43.985	1	0.000	10.785

Table 4. The coefficients of sub-drivers.

Sub-driver	Coefficient
Quality	0.521578
Price	0.332194
Convenience	0.551596
Brand preference	0.504621
Advert publicity	0.345153
Corporate reputation	0.520810
Commonweal activity	0.291688
Loyalty program	0.220965
Preferential policy	0.245620
Customer's understanding of firm	0.059878
Firm's understanding of customer	0.090150
Special treatment	0.173050
Group activities	0.151427
Trust	0.377928
Word-of-mouth	0.444107
Cross-buying	0.322463
Brand inertia	0.260854

significant investment to reduce customers' transaction time and energy. Firms can improve convenience in three aspects. First, improve the construction of branches through their location, scale, environment and business hours, such as to shorten the time customers need to arrive at the branch and wait and increase information desks in crowd branches etc. Second, improve the quality of services such as to shorten the service time for each customer and strengthen the training of staff, as well as simplify business process etc. Finally, firms can use network technology or cooperate with banks to carry out business, such as online payment, online business operations, phone bank service.

Promotion strategies for brand driver

Brand driver includes brand preference, advert publicity, corporate reputation and commonweal activity, and their coefficients are 0.504621, 0.345153, 0.520810 and 0.291688 respectively. We can see the coefficient of corporate reputation is the largest, brand preference second.

Brand preference (0.504621) is an significant sub-driver which is the result of consumers' recognition of

brand image and spirit. In order to improve brand preference, developing those brands corresponding with customer's characteristics, consumption capacity and status is the most important. For example, M-zone of China Mobile captures the fashionable and personalized feature of young people and wins their preference. Therefore, mobile communication firms should develop brand spirit and brand personality according to the characteristics of different customer groups to win customers' recognition as great as possible, and then to promote customer equity.

Advert publicity (0.345153) also impacts brand utility a lot, and finally the purchase intention of customer. Mobile communication firms should consequently apply advertisement to induce positive consumption. They can also publicize themselves through some low cost ways, such as short message, cooperating with telephone suppliers. Coefficient of corporate reputation (0.520810) is the largest among the brand sub-drivers, indicating the importance to set up a good reputation, which needs the firm to maintain good performance in a long time (including service quality, financial position, contract commitment, social morality and business ethics etc.) (Edmund and John, 1998) Thus mobile communication firms should make effective management of factors that

may influence reputation through reputation management system (Hutton, 2001).

Commonweal activity (0.291688) has a relatively small coefficient, but its impact cannot be ignored. Those firms which participate in social welfare activities such as providing sponsorship to Hope Project and Charities Aid Foundation, are commonly loved and supported by customers. Thus the mobile communication firms could invest in commonweal activities appropriately.

Promotion strategies for relationship driver

Relationship driver includes loyalty program, preferential policy, special treatment, group activity, customers understanding of firm, firms understanding of customer and customer's trust of firm. Their coefficients are 0.220965, 0.245620, 0.059878, 0.090150, 0.173050, 0.151427 and 0.377928 respectively.

Both of loyalty program and preferential policy have no too large coefficients among relationship drivers, but this can not indicate that they are not important. In this survey, some customers are fond of the loyalty program and preferential policy, while most customers know nothing about these policies. Another some customers think procedures of these policies are not convenient, such as exchanging credit for gifts. Thus firms should notice to send related information to customers and simplify the procedures.

Customer's understanding of firm (0.059878) has the smallest coefficient, suggesting that it impacts customer equity least. Although customers want to know more and more about firms along with more and more purchase, for mobile communication firms, their customers are not interested in visiting and knowing the firm. Mobile communication firms could reduce investment in this area.

Coefficient of firm's understanding of customer (0.090150) is also very small. Firm's understanding of customer makes the customer feel he/she is important and enhances his/her favor to the firm. But for mobile communication firm, this point is not important. In the market of mobile communication, customers do not care whether the firm knows about them nor consider this aspect. So firms can reduce investment appropriately in this area too.

The coefficient of special treatment (0.173050) is comparatively small because it is mainly designed for the high-end customers, leading a limited effect on the overall. But special treatment is an effective way to enhance customer loyalty of high-end customers, and then customer equity. For instance, China Unicom establishes "Unicom Horizon Green Channel" in airport and railway station in major cities to make customers enjoy special service and discount. This measure attracts many customers who travel a lot to choose China Unicom, despite of their un-satisfaction with the weak signal.

Group activity (0.151427) also has limited impact on

customer equity. During our survey, it was found that many customers are not very interested in these activities. Thus mobile communication firms can be suggested to integrate the resources on group activity to special customer groups, for example, holding games in schools or sponsoring college activities, which could acquire good effects with low cost.

Coefficient of customer's trust of firm (0.377928) is the largest among relation sub-drivers, indicating that trust is an important sub-driver. For customer trust is generated from customer satisfaction, mobile communication firms should make more effort to enhance trust by improving customer satisfaction and avoid anything that may be harmful to it.

Promotion strategies for perception driver

Perception driver includes word-of-mouth and cross-buying; their coefficients are 0.444107 and 0.322463.

Word-of-mouth (0.444107) has great impact on customers' purchase decision; this is because in mobile communication market, customers believe others' consumption experience very much. Since there are positive and negative situations of word-of-mouth, mobile communication firms should make effort to generate positive word-of-mouth. On one hand, firms should try to give nice experience to customer through the action of value driver, brand driver and relationship driver. In this way, customer will give high evaluation to the firm and send positive word-of-mouth to others. On the other hand, firms should try to avoid negative word-of-mouth. Once negative word-of-mouth happens, measures should be taken promptly to compensate.

The coefficient of cross-buying (0.322463) is large, though it is lower than that of word-of-mouth. Customers' nice experiences are co-created by value drivers, brand drivers and relationship drivers. Thus, firms should try to raise customers' satisfaction through value drivers, brand drivers and relationship drivers to induce customers to make cross-buying. Meanwhile, in mobile communication market, cross-buying mostly occurs on additional services or support services of the services being used, so firms should emphasize the related support services and additional services to expand the cross-buying.

CONCLUSIONS AND RECOMMENDATIONS

This paper combined qualitative analysis with quantitative analysis to connect measurement model and promotion strategies of customer equity, and then proposed a series of suggestions and strategies to promote the customer equity of mobile communication firms in general.

In this study, we determined the influence coefficients of each sub-driver of customer equity based on the measurement model with four-dimensional drivers. The results showed that, for mobile communication firms, coefficients of value driver were the largest among the

four drivers of customer equity, indicating that what customers most cared about is just the delivered value firms provided to them, which was consistent with reality. Among all sub-drivers, the coefficients of convenience, quality, corporate reputation and brand preference were the biggest, and the firm should pay more attention and marketing resource to these aspects: to decrease transaction time; improve connection quality and the quality of relevant support services; build a good reputation; enhance brand personality and concept. Simultaneously, the coefficients of customer's understanding of firm, firms understanding of customer, group activities and special treatment were smaller. But we could not ignore them. Firms could appropriately reduce investment on them compared with other sub-drivers. In addition, the coefficients of cross-buying and word-of-mouth were large, indicating that they have significant influence on customer equity and providing support to add perception driver into the measurement model. This paper solved the problem to a certain extent that there was only qualitative analysis but no data support of the management and promotion of customer equity in traditional researches. This study also provided a new idea and reference value for further research on customer equity management and promotion.

However, there were several limitations in this study. Firstly, mobile communication firms were the research objects in this paper, causing that our results were closely based on the features of the market and customers of this industry. So, there may be limitations when expand our results to other industries or areas. If this happens, specific circumstances should be considered. Secondly, the weight coefficients figured out in the paper showed how important these sub-drivers were, but this just was a comparison among these sub-drivers and these numbers had no practical meaning. Thirdly, this research did not involve the quantification of customer equity for the limited length, but measurement is the basis and premise of promotion. Only after the estimation of the value of customer equity before and after the promotion strategies were taken, the effect of promotion could be judged, and then the marketing methods and investment direction could be adjusted. The author's other papers can be referred to learn measuring methods of customer equity (Shao, 2008).

This study applied the measurement model with four-dimensional drivers to customer equity promotion in mobile communication firms, and directed firm's marketing investment to some extent. Researches could be expanded in other fields to discuss the applicability of this model in customer equity promotion in future. Moreover, this paper researched on the customer equity promotion without considering customer background, customer revenue and customer education and so on, which should be considered when managing and promoting customer equity. And these considerations should be based on measuring the lifetime value of a single customer. Through the measurement of customer lifetime value, the

relationship between customer feature information and lifetime value could be established and customers could be classified, and then various strategies and methods could be taken aiming at different customer groups. Thus further research could be developed in this area.

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